

ICAR – INDIAN SUGARCANE RESEARCH INSTITUTE
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Personal Information

Name

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Designation

Scientist

Qualification

B.Tech. (Agril. Engg.): VNMKV, Parbhani

M. Tech. (FM&PE): GBPUA&T, Pantnagar

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Division

Agricultural Engineering Division

Research Area

1. Farm Mechanization
2. Sensor-based Agricultural Machinery
3. UAVs and Deep Learning

Patents

1. Manes GS, **Modi RU**, Mahal JS, Singh M and Dixit A. 2022. Tractor-operated seeder for mat type paddy nursery. *The Patent Office Journal No. 17/2022*. Pp. 26733.
2. Ingole NA, Ingole SN, Deshmukh SP, **Modi RU** and Ingole DN. 2025. Actively re-circulating automobile based hatchery [ARAMBH]. *Patent No. 559705 granted on Feb 06, 2025*.

External Funded Projects

1. RKVY funded ‘Agri Drone Project’ during 2022-2025: PI (₹ 35.0 Lakhs).
2. Uttar Pradesh Council of Agricultural Research funded ‘Center of Excellence in Farm Machinery’ project during 2024-2025: PI (₹ 19.09 Lakhs).
3. AICRP on FIM (Farm Implements and Machinery): Co-PI (ISRI, Lucknow Centre)
4. MoA&FW, Govt. of India funded ‘Assessment of farm mechanization status and prospects of custom hiring in India’: Co-PI (ISRI, Lucknow Centre).

Publications

1. **Modi RU***, Singh S, Singh AK and Blessy VA. 2024. Convolutional neural networks to classify human stress that occurs during in-field sugarcane harvesting: a case study. *Journal of Field Robotics*, 1-13. <https://doi.org/10.1002/rob.22373>. (NAAS: 10.2)
2. Singh MK, **Modi RU***, Singh AK and Singh RD. 2024. Design and development of tractor-operated trash mulcher-cum-stubble shaver device for sugarcane ratoon crop. *Sugar Tech*, 26: 573-584. <https://doi.org/10.1007/s12355-024-01361-9>. (NAAS: 7.90)
3. Ali M*, Dixit AK, Manes GS, **Modi RU***, Singh A and Prakash A. 2024. Design and development of a dust separation system for wheat straw combine. *Agricultural Mechanization in Asia, Africa, and Latin America*, 55(1). (NAAS: 6.30)
4. Subeesh A*, Kumar SP, Chakraborty SK, Upendar K, Chandel NS, Jat D, Dubey K, **Modi RU** and Khan MM. 2024. UAV imagery coupled deep learning approach for the development of an adaptive in-house web-based application for yield estimation in citrus orchard. *Measurement*, 114786. <https://doi.org/10.1016/j.measurement.2024.114786>. (NAAS: 11.2).
5. Dhimate AS, Srinivas I, Adake RV, Reddy BS, Pratibha G, Reddy MV and Modi RU. 2024. Development and evaluation of e-brush cutter for harvesting field crops. *Journal of Scientific Research and Reports*, 30 (9): 251-262. <https://doi.org/10.9734/jsrr/2024/v30i92350>. (NAAS: 5.17).
6. Singh J, Singh MK*, **Modi RU**, Kumar D and Singh SP. 2024. Role of agricultural engineers in building \$5 trillion economy of India. *RASSA Journal of Science for Society*, 6(2): 67-74. <http://dx.doi.org/10.5958/2583-3715.2024.00011.3>.
7. **Modi RU***, Chandel AK, Chandel NS, Dubey K, Subeesh A, Singh AK, Jat D and Kancheti M. 2023. State-of-the-art computer vision techniques for automated sugarcane lodging classification. *Field Crops Research*, 291: 108797. <https://doi.org/10.1016/j.fcr.2022.108797>. (NAAS: 12.15)
8. **Modi RU***, Kancheti M, Subeesh A, Raj C, Singh AK, Chandel NS, Dhimate AS, Singh MK and Singh S. 2023. An automated weed identification framework for sugarcane crop: A deep learning approach. *Crop Protection*, 173: 106360. <https://doi.org/10.1016/j.cropro.2023.106360>. (NAAS: 9.04)
9. Sood A*, Dixit AK, Khurana R, Singh M, **Modi RU** and Verma A. 2023. Design and development of tractor operated bund former for mulched field. *Agricultural Mechanization in Asia, Africa, and Latin America*, 54(1): 57-62. (NAAS: 6.14)
10. Khadatkhar A*, Sawant CP, Magar AP and **Modi RU**. 2023. Development and application of a tractor-operated side dispensing type farmyard manure applicator for organic fertilizer application in vineyards. *Agricultural Research*, 13: 160–168 <https://doi.org/10.1007/s40003-023-00683-6>. (NAAS: 5.95)
11. Khadatkhar A*, Magar AP, Sawant CP and **Modi RU**. 2024. Development and testing of automatic seedling extractor in robotic transplanter using mechatronics for nursery seedlings. *Discover Applied Sciences*, 6: 51. <https://doi.org/10.1007/s42452-024-05670-2>. (NAAS: 8.60)
12. Ali M*, Dixit AK, Manes GS, **Modi RU**, Singh A and Mahal AK. 2022. Evaluation of an integral dust separation system based wheat straw combine for improvement in animal feed quality. *Animal Nutrition and Feed Technology*, 22(3): 641-652. <https://doi.org/10.5958/0974-181X.2022.00051.8>. (NAAS: 6.23)

13. **Modi RU***, Manes GS, Mahal JS, Dixit AK and Singh M. 2022. Design of an innovative tractor-operated seeder for mat type paddy nursery. *Journal of Scientific and Industrial Research*, 81 (6): 683-694. <https://doi.org/jsir.v81i06.57997>. (NAAS: 7.05)
14. **Modi RU***, Manes GS, Mahal JS, Dixit AK and Singh M. 2022. Development and evaluation of tractor operated seeder for mat type paddy nursery under controlled field conditions. *Agricultural Mechanization in Asia, Africa, and Latin America*, 53 (3): 54-63. (NAAS: 6.14)
15. **Modi RU***, Manes GS, Mahal JS, Dixit AK, Singh A and Mahal AK. 2022. Field evaluation of tractor operated seeder for mat type paddy nursery. *Indian Journal of Agricultural Sciences*, 92 (9): 1066-1070. <https://doi.org/10.56093/ijas.v92i9.108615>. (NAAS: 6.37)
16. **Modi RU***, Singh A, Ali M, Manes GS and Dixit AK. 2022. Status of mat type nursery raising techniques for paddy cultivation in India-A review. *SKUAST Journal of Research*, 24(2): 124-132. <https://doi.org/10.5958/2349-297X.2022.00023.X>. (NAAS: 4.17)
17. Shelke GN*, Pandiarajan T, **Modi RU**, Indore N and Kad V. 2022. Design, development and performance optimization of farm level black gram dehuller. *Journal of Agricultural Engineering (India)*, 59(3): 251-268. <https://doi.org/10.52151/jae2022593.1780>. (NAAS: 4.79)
18. Sood A*, Dixit AK, Singh M, **Modi RU**, Singh A and Prakash A. 2022. Performance assessment of tractor operated bund former for mulched field. *Journal of Agricultural Engineering (India)*, 59 (1): 1-17. <https://doi.org/10.52151/jae2022591.1761>. (NAAS: 4.79)
19. Dash BS*, Kumar A, **Modi RU** and Namdev SK. 2020. Design and performance evaluation of self-propelled intra-canopy boom spraying system. *Journal of Agricultural Engineering (India)*, 57 (3):195-209. <https://doi.org/10.52151/jae2020573.1715>. (NAAS: 5.59)
20. **Modi RU***, Singh J, Bhattacharya TK and Singh TP. 2019. Methyl ester of cottonseed oil blended with ethanol as a renewable fuel on a multi-cylinder CI engine. *Agricultural Engineering Today*, 43 (1): 20-26. (NAAS: 5.30)
21. Namdev SK*, Pateriya R, **Modi RU** and Dash BS. 2019. Estimation of operational cost of various intercultural implements. *Pantnagar Journal of Research*, 17 (3): 250-255. (NAAS: 4.60)
22. Shelke GN*, Pandiarajan T and **Modi RU**. 2019. Effect of moisture content on engineering properties of black gram (*Vigna mungo*). *Research Journal of Agricultural Sciences*, 10 (1): 180-184. (NAAS: 4.54)
23. **Modi RU***, Ali M, Parmar RP and Namdev SK. 2018. Energy audit application for rice-wheat cropping system. *Oriental Journal of Computer Science and Technology*, 11 (4): 209-218. <http://dx.doi.org/10.13005/ojcs11.04.06>. (NAAS: 4.79)
24. **Modi RU***, Singh J and Bhattacharya TK. 2018. Fuel properties of methyl ester of cottonseed oil blended with ethanol. *International Journal of Chemical Studies*, 6 (1): 102-109. (NAAS: 5.31)
25. **Modi RU***, Singh J, Bhattacharya TK and Dash BS. 2017. Optimization of process parameters for cottonseed oil methyl ester production from refined cottonseed oil using RSM. *International Journal of Basic and Applied Agricultural Research*, 15 (3): 186-193. (NAAS: 4.60)

26. Namdev SK*, Pateriya R, Dash BS and **Modi R.** 2017. Performance evaluation of a modified offset rotavator in guava orchard. *International Journal of Agricultural Engineering*, 10 (2): 346-353. (NAAS: 4.43)

Book Chapters

1. **Modi RU** and Singh AK. 2023. Energy requirements for sustainable sugarcane cultivation. Handbook of Energy management in agriculture. In: Rakshit A, Biswas A, Sarkar A, Meena SV and Datta R (Eds). Handbook of Energy Management in Agriculture. Springer. Pp. 1-19. https://link.springer.com/chapter/10.1007/978-981-19-7736-7_4-1.
2. Mrunalini K, Behera B, Chandana P, Patnaik GP, **Modi RU**, Saraswat A, Rath N and Kumar N. 2022. Legumes to reduce ecological footprints for climate-smart cropping systems. In: Meena and Kumar (Eds). Advances in Legumes for Sustainable Intensification. Elsevier. Pp. 403-420. <https://doi.org/10.1016/B978-0-323-85797-0.00032-X>.
3. **Modi RU**, Murthy GRK, and Dhimate AS. 2021. Jalwayu smart taknik adarit mashinikaran se unnat krishi samagri ka upyog. In: Srinivasarao C. et al., (Eds). Jalwayu parivartan aur bhartiya krishi: chunotiya anukul aur shaman rannitiya. ICAR-National Academy of Agricultural Research and Management, Hyderabad, Telangana, India. Pp. 75-104.
4. **Modi RU**, Manjunatha K, Gautam PV, Nageshkumar T, Sanodiya R, Chaudhary V, Murthy GRK, Srinivas I and Rao CS. 2020. Climate-smart technology based farm mechanization for enhanced input use efficiency. In: Srinivasarao C. et al., (Eds). Climate Change and Indian Agriculture: Challenges and Adaption Strategies. ICAR-National Academy of Agricultural Research and Management, Hyderabad, Telangana, India. Pp. 325-357.
5. **Modi RU.** 2022. Future prospects of artificial intelligence in sugarcane culture and the sugar industry. In: Shukla et al., (Eds). Winter school on recent approaches for doubling farmers income in sugarcane based cropping system from December 08-28, 2022. ICAR-Indian Institute of Sugarcane Research, Lucknow, UP, India. Pp. 41-47.
6. Singh AK and **Modi RU.** 2022. Enhancing income of farmers through engineering interventions in sugarcane based cropping systems. In: 55th Engineers' Day 2022 Souvenir, The Institution of Engineers (India), UP State Centre, Lucknow, UP, India. Pp. 62-67.

Books

1. Kumar S, Singh S, Shiv A, Kumar R, **Modi RU** and Prakash B. 2022. IISR@70: A Memoire. Coffee Table Book. ICAR-IISR, Lucknow.
2. Swapna M., **Modi R.U.**, Baitha A., Rao G.P., Li Y.R., Shukla S. and Solomon S. (Eds). 2022. Souvenir de Presentation. 7th IAPSIT International Sugar Conference and SUGARCON 2022. Sustainability of the sugar and integrated industries: Issues and initiatives October 16-19, 2022, ICAR-Indian Institute of Sugarcane Research, Lucknow, Uttar Pradesh, India P 312.

Success Story

1. Mat Type Nursery Seeder: A Success Story. 2025. All India Coordinated Research Project on Farm Implements and Machinery, ICAR- Central Institute of Agricultural Engineering, Bhopal, Madhya Pradesh, India. Technical Bulletin No. CIAE/FIM/TR/2024/388.

Awards

- 1. Pellizzi Prize 2020:** International best PhD on Farm Mechanization from Club of Bologna, Italy (Cash Prize: 800 Euro) in 30th CoB Members' Meeting, Bologna, Italy on October 22, 2021.
- 2. ISAE-JAEI Best Reviewer Award 2022** in 56th Annual Convention of Indian Society of Agricultural Engineers, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, India during November 09-11, 2022.
- 3. Best Young Scientist Award 2023** from the ICAR-ISRI, Lucknow during the 73rd Foundation Day of the Institute on February 16, 2024.
- 4. Best Poster Award (First)** in the Technical Session I, 7th IAPSIT International Sugar Conference and SUGARCON 2022 on Sustainability of the Sugar and Integrated Industries: Issues and Initiatives held at ICAR-IISR, Lucknow, India during October 16-19, 2022.
- 5. Best Oral Paper Award (Second)** in the Technical Session I, 7th IAPSIT International Sugar Conference and SUGARCON 2022 on Sustainability of the Sugar and Integrated Industries: Issues and Initiatives held at ICAR-IISR, Lucknow, India during October 16-19, 2022.
- 6. Best Oral Paper Award (First)** in the National conference on the role of Agricultural Engineering in economic development and self-dependence during the COVID-19 situation (Hindi) held at ICAR-CIAE, Bhopal, India during July 28-29, 2021.
- 7. Best Poster Award** in International Web-Conference on Smart Agriculture for Resource Conservation and Ecological Stability organized by Academy of Natural Resource Conservation and Management, Lucknow, India during October 29-31, 2021.